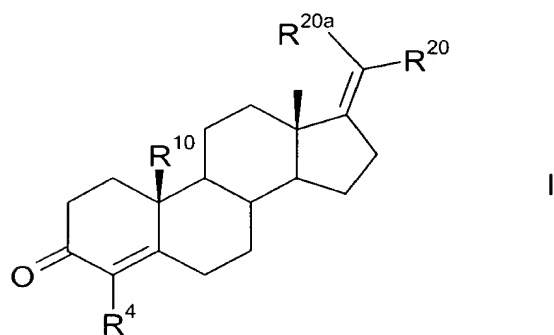


This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A 17-Methylene steroid of formula I



in which

R^4 is a halogen atom or a pseudohalogen,

R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

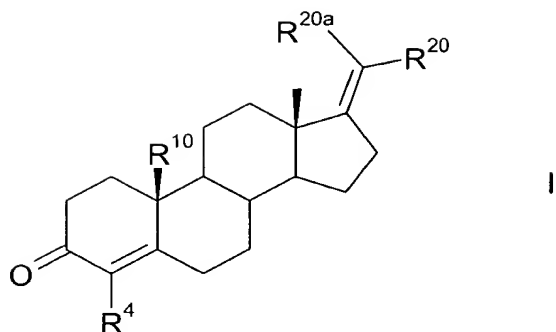
R^{20} and R^{20a} are, independently of one another, ~~a hydrogen atom,~~ a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or

one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen,

~~wherein, when R^{10} is methyl and R^{20} and R^{20a} are both hydrogen, R^4 is not chlorine.~~

Claim 2 (Previously Presented): A 17-Methylene steroids according to claim 1, wherein R^4 is a chlorine or bromine atom or a cyano group.

Claim 3 (Previously Presented): A 17-Methylene steroid of formula I



in which

R^4 is a halogen atom or a pseudohalogen,

R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

one of radicals R^{20} and R^{20a} is a hydrogen atom or a methyl group, and the other radical is a fluorine, chlorine or bromine atom, an azido, cyano or rhodano group or hydroxymethyl.

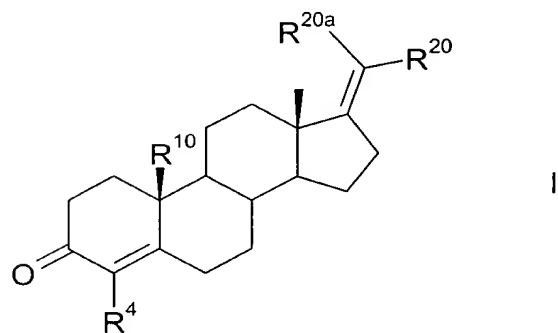
Claim 4 (Previously Presented): A 17-Methylene steroids according to claim 1, wherein R^{10} is a hydrogen atom or a methyl group.

Claim 5 (Previously Presented): A 17-Methylene steroid selected from the group consisting of

- 1) E-17-Chloromethylene-4-chloro-estr-4-en-3-one,
- 2) E-17-Cyanomethylene-4-chloro-estr-4-en-3-one,
- 3) Z-17-Cyanomethylene-4-chloro-estr-4-en-3-one,
- 4) Z-17-(1')-Cyanoethylidene-4-chloro-estr-4-en-3-one,
- 5) Z-17-Ethylidene-4-chloro-estr-4-en-3-one,
- 6) E-17-Ethylidene-4-chloro-estr-4-en-3-one,
- 7) E-17-Bromomethylene-4-chloro-estr-4-en-3-one,

- 8) Z-17-Chloroethylidene-4-chloro-estr-4-en-3-one,
- 9) Z-17-Bromoethylidene-4-chloro-estr-4-en-3-one,
- 10) E-17-Chloromethylene-4-cyano-androst-4-en-3-one,
- 11) E-17-Chloromethylene-4-chloro-androst-4-en-3-one,
- 12) E-17-(2')-Hydroxyethylidene-4-chloro-estr-4-en-3-one, and
- 13) Z-17-(2')-Hydroxyethylidene-4-chloro-estr-4-en-3-one.

Claim 6 (Previously Presented): A process for preparing a 17-methylene steroid of formula I



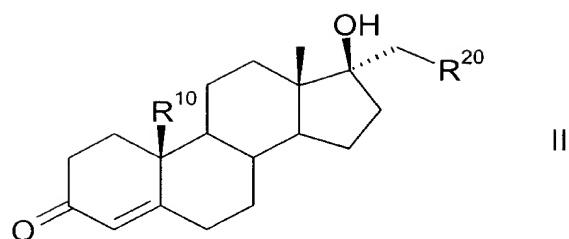
in which

R⁴ is a halogen atom or a pseudohalogen,

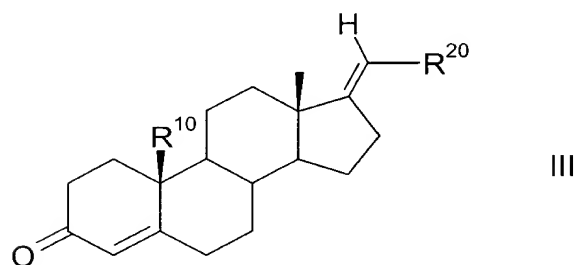
R¹⁰ is a hydrogen atom or a straight-chain or branched C₁-C₄ alkyl group,

R²⁰ is a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, or a halogen atom or a pseudohalogen, and

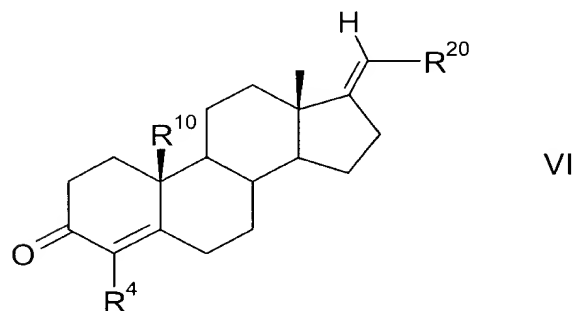
R^{20a} is a hydrogen atom, comprising reacting a compound of formula II,



in an aprotic solvent with an acid chloride to form a 17-methylene steroid of formula III,



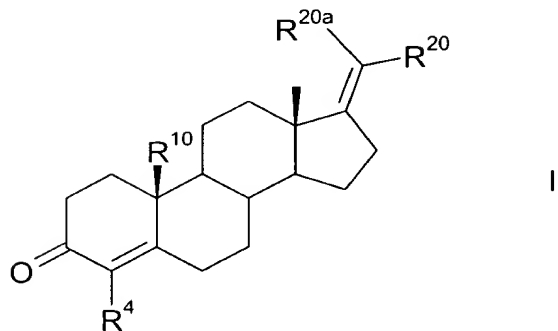
the 4,5-epoxide is generated with $\text{H}_2\text{O}_2/\text{NaOH}$, the 4,5-epoxide is then opened with a nucleophilic reagent, which is derived from a halogen atom or pseudohalogen, in a dipolar aprotic solvent to a halogen- or pseudohalogen hydrin, and optionally reacted with mineral acid, carboxylic acid or sulfonic acid in a protic or aprotic solvent with dehydration to a compound of formula IV,



wherein R^4 is a halogen atom or pseudohalogen, R^{10} is a hydrogen atom or a straight-chain or branched $\text{C}_1\text{-C}_4$ alkyl group,

and R^{20} is a C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, a halogen atom or a pseudohalogen.

Claim 7 (Previously Presented): A process for preparing a 17-methylene steroid of formula I



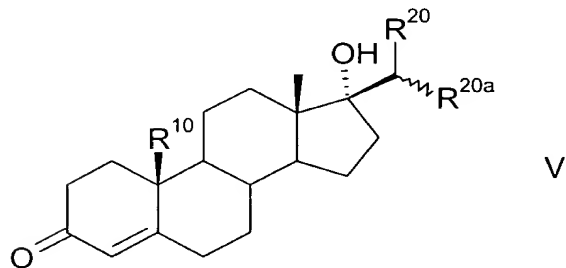
in which

R^4 is a halogen atom or a pseudohalogen,

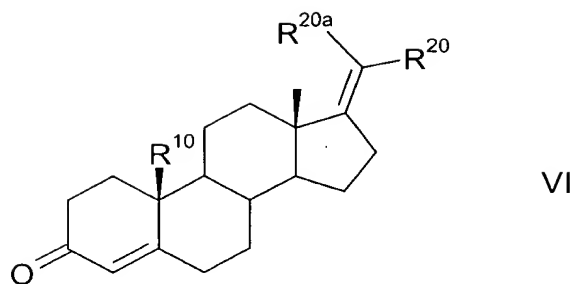
R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

R^{20} and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or

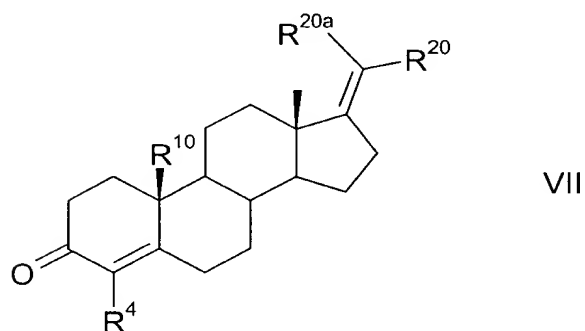
one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen, comprising reacting a compound of formula V,



with an acid chloride in an aprotic solvent to form a methylene steroid of formula VI,

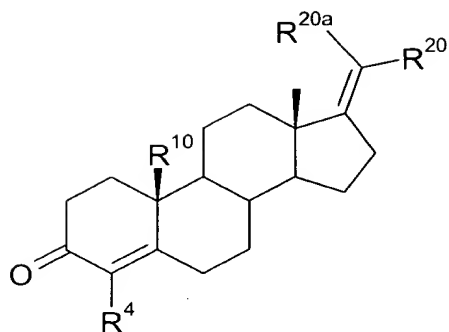


the 4,5-epoxide is generated with $\text{H}_2\text{O}_2/\text{NaOH}$, the 4,5-epoxide is then opened with a nucleophilic reagent, which is derived from a halogen atom or pseudohalogen, in a dipolar aprotic solvent to a halogen- or pseudohalogen hydrin, and optionally reacted with mineral acid, carboxylic acid or sulfonic acid in a protic or aprotic solvent with dehydration to a compound of formula VII,



in which R^4 is a halogen atom or pseudohalogen, R^{10} is a hydrogen atom or a straight-chain or branched $\text{C}_1\text{-C}_4$ alkyl group, and R^{20} is a C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and R^{20a} is a hydrogen atom, a halogen atom or a pseudohalogen.

Claim 8 (Currently Amended): A ~~pharmaceutical composition comprising at least one~~ 17-methylene steroid of formula I



in which

R^4 is a halogen atom or a pseudohalogen,

R^{10} is a hydrogen atom or an ethyl, propyl, isopropyl, butyl, isobutyl, or tert-butyl group ~~a straight chain or branched C₁-C₄ alkyl group,~~

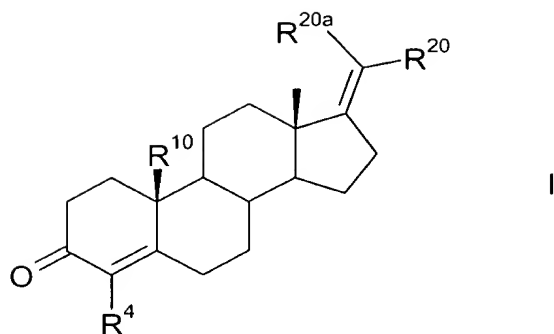
R^{20} and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, or

one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C₁₋₄ alkyl or hydroxy-C₁₋₄ alkyl group, and the other radical is a halogen atom or a pseudohalogen,

and a pharmaceutically compatible adjuvant or vehicle.

Claim 9 (Cancelled).

Claim 10 (Currently Amended): A 17-Methylene steroid ~~method of treating a prostate diseases,~~
~~alopecia of the male type, acne or hirsutism, comprising administering to a patient in need~~
~~thereof an effective amount of a compound~~ of formula I



in which

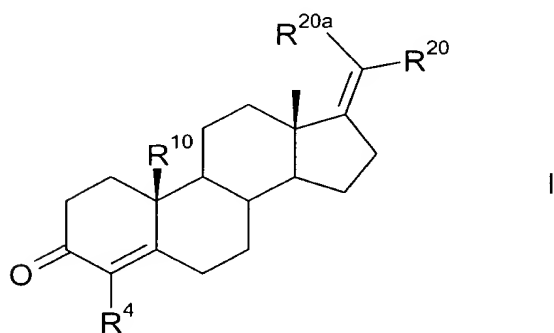
R^4 is a ~~halogen atom~~ fluorine, bromine, or iodine atom or a pseudohalogen,

R^{10} is a hydrogen atom or a straight-chain or branched C_{1-4} alkyl group,

R^{20} and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or

one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 11 (Currently Amended): A 17-Methylene steroid ~~method of effecting contraception in a man or in a woman comprising administering to a patient in need thereof an effective amount of~~ a compound of formula I



in which

R^4 is a halogen atom or a pseudohalogen,

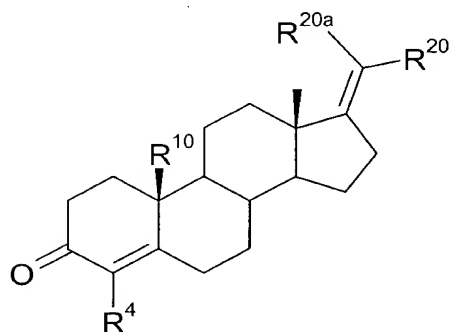
R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

R^{20} and R^{20a} ~~are, independently of one another,~~ is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group,

R^{20a} is a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or

one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 12 (Currently Amended): A 17-Methylene steroid ~~method inhibiting 5 α -reductase~~
~~comprising administering to a patient in need thereof an effective amount of a compound of~~
formula I



in which

R^4 is a ~~halogen atom~~ or a pseudohalogen,

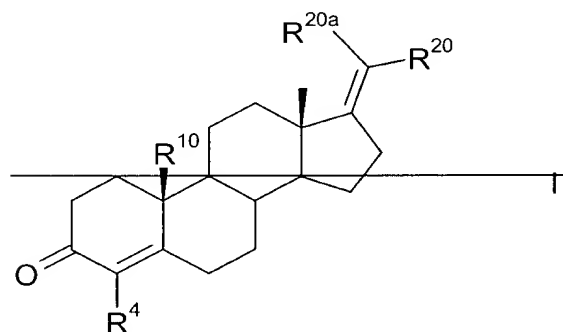
R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

R^{20} and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or

one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 13 (Currently Amended): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 8 and a pharmaceutically compatible adjuvant or vehicle

~~17-Methylene steroid of formula I~~



in which

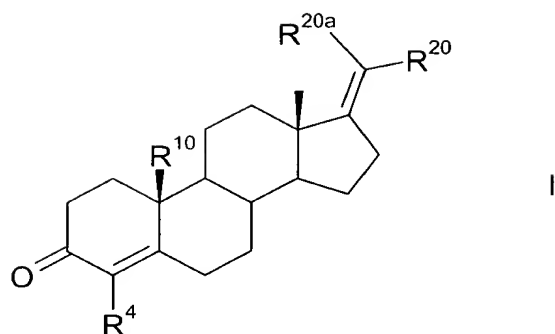
R^4 — is a halogen atom,

R^{10} — is a hydrogen atom or a straight chain or branched C_1 - C_4 alkyl group,

R^{20} and R^{20a} are, independently of one another, a hydrogen atom, a straight chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or

one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 14 (Previously Presented): A 17-Methylene steroid of formula I



in which

R^4 is an azido, rhodano or cyano group,

R^{10} is a hydrogen atom or a straight-chain or branched C_1 - C_4 alkyl group,

R^{20} and R^{20a} are, independently of one another, a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, or

one of radicals R^{20} and R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other radical is a halogen atom or a pseudohalogen.

Claim 15 (Previously Presented): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 1 and a pharmaceutically compatible adjuvant or vehicle.

Claim 16 (Previously Presented): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 10 and a pharmaceutically compatible adjuvant or vehicle
~~method of treating a prostate diseases, alopecia of the male type, acne or hirsutism, comprising administering to a patient in need thereof an effective amount of a compound according to claim 1.~~

Claim 17 (Previously Presented): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 11 and a pharmaceutically compatible adjuvant or vehicle ~~method of effecting contraception in a man or in a woman comprising administering to a patient in need thereof an effective amount of a compound according to claim 1.~~

Claim 18 (Previously Presented): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 12 and a pharmaceutically compatible adjuvant or vehicle ~~method inhibiting 5 α -reductase comprising administering to a patient in need thereof an effective amount of a compound according to claim 1.~~

Claim 19 (Previously Presented): A pharmaceutical composition comprising at least one 17-methylene steroid according to claim 5 and a pharmaceutically compatible adjuvant or vehicle.

Claim 20 (Currently Amended): A method of treating a prostate disease ~~diseases, alopecia of the male type, acne or hirsutism~~, comprising administering to a patient in need thereof an effective amount of a compound according to claim 5 or a pharmaceutical composition comprising said effective amount of said compound and a pharmaceutically compatible adjuvant or vehicle.

Claim 21 (Currently Amended): A method of effecting contraception in a man or in a woman comprising administering to a patient in need thereof an effective amount of a compound according to claim 5 or a pharmaceutical composition comprising said effective amount of said compound and a pharmaceutically compatible adjuvant or vehicle.

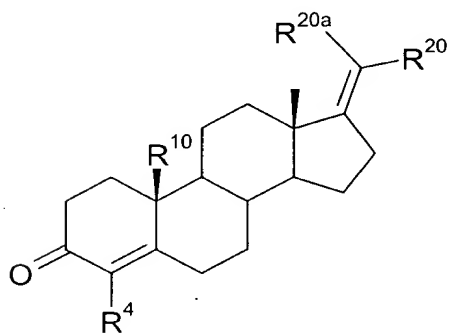
Claim 22 (Previously Presented): A method inhibiting 5 α -reductase comprising administering to a patient in need thereof an effective amount of a compound according to claim 5.

Claim 23 (Previously Presented): A 17-Methylene steroid according to claim 1, wherein R⁴ is a halogen atom.

Claim 24 (Previously Presented): A 17-Methylene steroid according to claim 1, wherein R⁴ is an azido, rhodano or cyano group.

Claim 25 (Previously Presented): A 17-Methylene steroid according to claim 1, wherein R⁴ is a cyano group.

Claim 26 (Previously Presented): A 17-Methylene steroid of formula I



in which

R⁴ is a halogen atom or a pseudohalogen,

R¹⁰ is a hydrogen atom or a straight-chain or branched C₁-C₄ alkyl group,

one of R^{20} or R^{20a} is a hydrogen atom, a straight-chain or branched C_{1-4} alkyl or hydroxy- C_{1-4} alkyl group, and the other of

R^{20} or R^{20a} is a straight-chain or branched C_{1-4} alkyl, a hydroxy- C_{1-4} alkyl group, a halogen atom or a pseudohalogen.